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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,489	09/17/2002	Travis Robert Glare	24747-1104US	6955

35489 7590 02/11/2005

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EXAMINER	
KUBELIK, ANNE R	

ART UNIT	PAPER NUMBER
1638	

DATE MAILED: 02/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/070,489	GLARE ET AL.	
	Examiner	Art Unit	
	Anne R. Kubelik	1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-48* is/are pending in the application.

4a) Of the above claim(s) *15,17-40 and 44-48* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,16 and 41-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 September 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *sequence search results*.

DETAILED ACTION

1. Applicant's election with traverse of Group I (claims 1-14, 16 and 41-43) in the reply filed on 15 November 2004 is acknowledged.

The traversal is on the grounds that the restriction between groups I and IV should be withdrawn because the probes and primers of group IV are fragments of the nucleic acid of group I and because all group members are also nucleic acids; thus, groups I and IV share the same technical feature and form a single inventive concept (response pg 2). This is not found persuasive because the nucleic acids of groups I and IV have different nucleotide sequences and would be different products. Lack of unity practice limits exanimation to one product, one method of making the product and one method of using the product.

Applicant urges that that the restriction between groups II and III should be withdrawn because both are drawn to proteins, as the ligand of group III may be a protein; thus, groups II and III share the same technical feature and form a single inventive concept (response pg 2). This is not found persuasive because the ligand could be something other than a protein; thus, groups II and III would not share the same technical feature of being proteins. Furthermore, the protein of group II and any protein ligand that binds to it would have different amino acid sequences and would be different products. Lack of unity practice limits examination to one product, one method of making the product and one method of using the product.

Applicant urges that that none of the references cited in the restriction teach or disclose SEQ ID NO:1 (response pg 2-3). This is not found persuasive because the claims appear to be drawn to any nucleic acid with 75% or 50% homology to SEQ ID NO:1 or any fragment thereof (see objections and rejections below). The cited references teach such nucleic acids.

The requirement is still deemed proper and is therefore made FINAL.

Claims 15, 17-40 and 44-48 are withdrawn from consideration as being drawn to non-elected inventions.

2. This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825.

Sequence identifiers are missing from the Brief Descriptions of Figures 4 and 5 and from pg 22, line 12, and pg 29, line 9.

Full compliance with the sequence rules is required in response to this Office action. A complete response to this Office action must include both compliance with the sequence rules and a response to the issues set forth herein. Failure to fully comply with both of these requirements in the time period set forth in this Office action will be held to be non-responsive.

3. The specification is objected to because there appears to be two Brief Descriptions of the Figures, one on pg 16-17 and the other on pg 17-19.

Claim Objections

4. Claims 2-4 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. It is unclear in claim 1what is intended to be claimed, a nucleic acid of SEQ ID NO:1 or a nucleic acid encoding an insecticidal complex or a fragment or homolog thereof, or a nucleic acid with 75% homology to SEQ ID NO:1. If what is intended is a nucleic acid of SEQ ID NO:1, then claims 2-4 are improperly dependent upon claim 1. A properly dependent claim includes all of the limitations of the parent claim(s), as well as a

further limitation. As SEQ ID NO:1 already comprises bases 1995-18937, 2411-9547, 9589-13883 and 14546-17467 of itself, the claim does not further limit the parent claim. If the intent is to claim a nucleic acid comprising only bases 1995-18937, 2411-9547, 9589-13883 or 14546-17467 of SEQ ID NO:1, then claims 2-4 are improperly dependent for failing to include all of the limitations of the parent claim.

5. Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. In addition to claim 1 being unclear, it is unclear in claim 10 what is intended to be claimed, a nucleic acid encoding an insecticidal complex or a fragment or homolog thereof and capable of hybridizing to the nucleic acid of claim 1, some other nucleic acid that hybridizes to that of SEQ ID NO:1, or a nucleic acid with 50% identity to the listed fragments of SEQ ID NO:1. A claim to a nucleic acid with a nucleic acid with 50% identity to the listed fragments of SEQ ID NO:1 is broader that a claim to a nucleic acid of SEQ ID NO:1 or a nucleic acid with 75% homology to SEQ ID NO:1.

6. Claims 14, 16 and 41 are objected to because of the following informalities:

In claim 14, there should be no comma after "including" in line 2, and there should be an "and" before pLAFR3 in line 4.

In claim 16, line 1, there is an improper article before "polypeptide".

In claim 41, line 2, there is an improper article before "nucleic".

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Neither the instant specification nor the originally filed claims appear to provide support for the phrase "The purified and isolated nucleic acid of claim 1... *luminescens* toxins". The closest support is on pg 4, lines 1-8, in which the nucleic acid is operably linked to an additional nucleotide sequence, wherein that additional nucleotide sequence encodes the toxins. However, there is no support for SEQ ID NO:1, or any of its parts, being any of the listed toxins, as the current claims appear to state. Thus, such a phrase constitutes NEW MATTER. In response to this rejection, Applicant is required to point to support for the phrase or to cancel the new matter.

9. Claims 1, 9-14, 16 and 41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are broadly drawn to a multitude of nucleic acids that have 75% or 50% homology to SEQ ID NO:1. In contrast, the specification only describes a coding sequence from *Serratia entomophila* that comprises SEQ ID NO:1. Applicant does not describe other nucleic acids encompassed by the claims, and the structural and functional features that distinguish all such nucleic acids from other nucleic acids are not provided.

Hence, Applicant has not, in fact, described nucleic acids that have 75% or 50% homology to SEQ ID NO:1 within the full scope of the claims, and the specification fails to provide an adequate written description of the claimed invention.

Therefore, given the lack of written description in the specification with regard to the structural and functional characteristics of the claimed compositions, it is not clear that Applicant was in possession of the claimed genus at the time this application was filed.

See *Univ. of California v. Eli Lilly*, 119 F.3d 1559, 43 USPQ 2d 1398 (Fed. Cir. 1997) at pg 1406:

> ... A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or of a recitation of structural features common to the members of the genus, which features constitute a substantial portion of the genus.
> ... the claimed genera of vertebrate and mammal cDNA are not described by the general language of the '525 patent's written description supported only by the specific nucleotide sequence of rat insulin.

10. Claims 1, 9-14, 16 and 41 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a nucleic acid of SEQ ID NO:1, and a method of expressing SEQ ID NOs:2-4 in *E.coli*, does not reasonably provide enablement for nucleic acids that have 75% or 50% homology to SEQ ID NO:1, a recombinant expression vector comprising the nucleic acid, a method of producing the protein encoding by the nucleic acid and a plant, bacterium, virus or fungus transformed with the nucleic acid. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The claims are broadly drawn to a nucleic acid that has 75% or 50% homology to SEQ ID NO:1, a recombinant expression vector comprising the nucleic acid, a method of producing the protein encoding by the nucleic acid and a plant, bacterium, virus or fungus transformed with the nucleic acid.

The instant specification, however, only provides guidance for determination that a 16.9 kb portion of pADAP has the ability to cause disease in *Costelytra zealandica* larvae (pg 23-25); sequencing of an almost 19 kb portion, SEQ ID NO:1, of pADAP to show that it has 9 ORFS, 3 of which, SEQ ID NOs: 2-4, have homology to protein components of insecticidal toxins of *Photorhabadus luminescents* (pg 26-29); expression of SEQ ID NOs:2-4in E. coli and demonstration that they are active against grass grub but not other scarabs (pg 36-38).

The instant specification fails to provide guidance for a nucleic acid that has 75% or 50% homology to SEQ ID NO:1, a recombinant expression vector comprising the nucleic acid, a method of producing the protein encoding by the nucleic acid and a plant, bacterium, virus or fungus transformed with the nucleic acid.

The instant specification fails to provide guidance for exact hybridization or amplification conditions and probes/primers to use to isolate insecticidal protein-encoding nucleic acids that hybridize to SEQ ID NO:1, nor does it teach where to find such nucleic acids.

The instant specification fails to teach how to make insecticidal protein-encoding nucleic acids with 75% or 50% homology to SEQ ID NO:1.

Making substitutions in proteins does not produce predictable results. Lazar et al (1988, Mol. Cell. Biol. 8:1247-1252) showed that the "conservative" substitution of glutamic acid for aspartic acid at position 47 reduced biological function of transforming growth factor alpha while "nonconservative" substitutions with alanine or asparagine had no effect (abstract). Similarly, Hill et al (1998, Biochem. Biophys. Res. Comm. 244:573-577) teach that when three histidines that are maintained in ADP-glucose pyrophosphorylase across several species are substituted with the "nonconservative" amino acid glutamine, there is little effect on enzyme activity, while the substitution of one of those histidines with the "conservative" amino acid

arginine drastically reduced enzyme activity (see Table 1). All these mutated proteins, however, would have at least 95% identity to the original protein. The nucleic acids encoding all these mutated proteins, however, would hybridize under high stringency to the nucleic acids encoding the original protein.

Given the claim breath, unpredictability, and lack of guidance as discussed above, undue experimentation would have been required by one skilled in the art to develop and evaluate nucleic acids encoding with 75% or 50% identity to SEQ ID NO:1. The insecticidal proteins iencoded by SEQ ID NOs:2-4 are in total 4776 amino acids long. Making all possible single amino acid substitutions in an 4776 amino acid long protein would require making and analyzing 19^{4776} nucleic acids; these proteins would have 99% identity to any one of SEQ ID NOs:2-4. Nucleic acids with 75% or 50% identity to the 18937 nucleotide long SEQ ID NO:1, would have 4734 or 9468 substitutions, respectively; that is they could have substitutions in every amino acid in the protein.

The instant specification fails to provide guidance for which amino acids of SEQ ID NOs:2-4 can be altered and to which other amino acids, and which amino acids must not be changed, to maintain insecticidal activity of the encoded proteins. The specification also fails to provide guidance for which amino acids can be deleted and which regions of the protein can tolerate insertions and still produce a functional enzyme.

Guo et al (2004, Proc. Natl. Acad. Sci. USA 101: 9205-9210) teach that while proteins are fairly tolerant to mutations resulting in single amino acid changes, increasing the number of substitutions additively increases the probability that the protein will be inactivated (pg 9209, right column, paragraph 2). Thus, making and analyzing proteins with any number of amino acid substitutions that also have insecticidal activity would require undue experimentation.

As the specification does not describe the transformation of any plant with a nucleic acid that has 75% or 50% homology to SEQ ID NO:1, undue trial and error experimentation would be required to screen through the myriad of nucleic acids encompassed by the claims and plants transformed therewith, to identify those with resistance to *Costelytra zealandica* larvae, if such plants are even obtainable.

The claims are also drawn to nucleic acids that encode only one of SEQ ID NOs:2-4. The specification teaches that mutations in the coding regions for any one of SEQ ID NOs:2-4 eliminate the disease causing ability of all of SEQ ID NO:1 (pg 25, lines 11-14; Fig. 2c). Thus, none of SEQ ID NO:2-4 alone are sufficient to provide resistance to *Costelytra zealandica* larvae, and a plant transformed with a nucleic acid encoding only one or two would not be resistant. Additionally, nucleic acids encoding only SEQ ID NO:2 (SepA) could not be expressed in bacteria (Hurst et al, 2000, J. Bacteriol. 182:5127-5138; see paragraph spanning pg 5133-5134 and that spanning the columns on pg 5134). Furthermore, the specification does not teach how a use a nucleic acid encoding only one of SEQ ID NOs:2-4.

Given the claim breath, unpredictability in the art, undue experimentation, and lack of guidance in the specification as discussed above, the instant invention is not enabled throughout the full scope of the claims.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 1-14, 16 and 41-43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. Dependent claims are included in all rejections.

Claim 1 is indefinite in its recitation of "nucleotide sequence of SEQ ID NO:1" followed by "that encodes at least one of ... hybridization conditions". It is unclear which is intended to be claimed, a nucleic acid of SEQ ID NO:1 or a nucleic acid encoding an insecticidal complex or a fragment or homolog thereof, or a nucleic acid with 75% homology to SEQ ID NO:1. For purposes of examination, the claim was interpreted to read on all possibilities.

Claims 8 and 42-43 lack antecedent basis for the limitation ""the *Bacillus* ... *luminescens* toxins".

Claim 9 is indefinite in its recitation of "wherein the nucleic acid may comprise DNA, cDNA or RNA." It is unclear what else the nucleic acid could be other than DNA, cDNA or RNA.

Claim 10 is indefinite as words appear to be missing between "molecules" and "said", and between "thereof" and "capable" in line 2.

Claim 10 lacks antecedent basis for the limitation "the nucleic acid molecules" in line 2.

Claim 10 is indefinite in its recitation of "nucleic acid molecule as claimed in claim 1" followed by "wherein ... between the sequences". It is unclear which is intended to be claimed, a nucleic acid encoding an insecticidal complex or a fragment or homolog thereof and capable of hybridizing to the nucleic acid of claim 1, some other nucleic acid that hybridizes to that of SEQ ID NO:1, or a nucleic acid with 50% identity to the listed fragments of SEQ ID NO:1. For purposes of examination, the claim was interpreted to read on all possibilities.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 10 recites the broad recitation 50% identity, and the claim also recites "preferably, 60%, more preferably 70% and most preferably 90-95% or greater identity" which is the narrower statement of the range/limitation.

Claim 14 recites the broad recitation "any suitable natural or artificial plasmid/vector", and the claim also recites "including, pUC 19 ... pLAFR3" which is the narrower statement of the range/limitation.

Claim 12 lacks antecedent basis for the limitation "The recombinant expression vector(s)" in line 1.

Claim 12 is indefinite in its claiming vectors and hosts. Claims should be drawn to only one product. If someone used only one, would be claim be infringed?

Claim 14 is indefinite in its recitation of references within the claim.

Claim 16 lacks antecedent basis for the limitation "said vector as defined above".

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14. Claims 1, 9-10, 12-14, 16 and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Kramer et al (US Patent 6,281,413, filed February 1998).

Kramer et al teach an isolated DNA encoding an insecticidal complex and with 54.0% identity to SEQ ID NO:1 (see search results). Kramer et al also teach recombinant expression vectors comprising the nucleic acid and plants transformed with it (claims 12 and 15-16) and a method of expressing the proteins encoded by the nucleic acid, wherein the method comprises transforming a host cells with a vector encoding the nucleic acid and recovering the protein (column 14, lines 29-61; column 19, lines 29-32; column 26, lines 20-53). The vectors are selected from any suitable natural or artificial plasmids or vectors.

15. Claims 1, 9-10 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Jarrett et al (WO 98/08388).

Jarrett et al teach an isolated DNA encoding an insecticidal complex and with 53.1% identity to SEQ ID NO:1 (see search results). Jarrett et al also teach recombinant expression

vectors comprising the nucleic acid (claims 24-26). The vectors are selected from any suitable natural or artificial plasmids or vectors.

16. Claims 1-4, 7 and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Grkovic et al (1995, Appl. Environ. Microbiol. 61:2218-2223) taken with the evidence of the instant application.

Grkovic et al teach an isolated DNA, pADAP, from *Serratia entomophila* (Table 1). The instant specification teaches pADAP comprises SEQ ID NO:1 (pg 23-26 and Table 1). pADAP comprises bases 2411-9547, 9598-13884 or bases 14546-17476 of SEQ ID NO:1 operatively linked to additional nucleotide sequences that encode insecticidal proteins, that is the other insecticidal proteins encoded by SEQ ID NO:1.

17. Claims 5-6, 8 and 42-43 are free of the prior art, to the extent they read on a nucleic acid of SEQ ID NO:1 or bases 1995-18937 of SEQ ID NO:1 further comprising another sequence that encodes an insecticidal protein or bases 2411-9547, 9598-13884 or bases 14546-17476 of SEQ ID NO:1 operatively linked to nucleotide sequences that encode the insecticidal proteins listed in claim 8 (keeping in mind the objections and 35 USC 112, 2nd rejections above), given the failure of the prior art to teach or suggest an isolated nucleic acid of SEQ ID NO:1 or bases 1995-18937 of SEQ ID NO:1 further comprising another sequence that encodes an insecticidal protein.

Conclusion

18. No claim is allowed.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne R. Kubelik, whose telephone number is (571) 272-0801. The examiner can normally be reached Monday through Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson, can be reached at (571) 272-0804. The central fax number for official correspondence is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

Anne R. Kubelik, Ph.D.
February 2, 2005

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Db      97518 GGTGTCCGCCAAGACTATCACTACGAAGATAACATCCTACCCGGTCGCTTACTTGCTATC 97459
Qy      14936 ACCGAGCAGGTTACCGGTGAAGCCGCCCAAATTACGGAACGCTTCGTGTACGCTGGCAAT 14995
Db      97458 ACCGAACAGGTGCAGGCAGAA---GAGAAAATGACCGAGCGCCTTATCTGGGCCGGCAAT 97402
Qy      14996 ACGGATGCCGAGAAGATTCTCAATCTGGCTGGCCAGTGTGTCAGTCATTACGATACCGCC 15055
Db      97401 ACGCCGCAAGAAAAAGAGTACAACCTTGCTGGTCAGTGTGTCCGCCACTACGATACCGCT 97342
Qy      15056 GGACTGGTGCAGACGGACAGCATCGCCCTGAGCGGCGTGCCGCTCGCCGTCACGCGGCAG 15115
Db      97341 GGACTCACTCAACTCAACAGCCTTTCTCTGGCTGGCGTCGTGCTATCACAATCTCAACAA 97282
Qy      15116 TTGCTGCCCGACGCGGCGGGGGCCAACTGGATGGGTGAGGATGCCTCGGCCTGGAATGAC 15175
Db      97281 CTGCTCGTCGATGATCAAAATGCCGACTGGACAGGTGAAGATCAAAGCCTCTGGCAGCAA 97222
Qy      15176 CTGCTGGATGGGGAGACGTTCTTCACCCAGACCCACGCTGATGCGACCGGCGCCGTCCTG 15235
Db      97221 AAACTGAGCAGTGATGTCTATACCACCCAAAATAGCACTGATGCCACCGGGGCTTTACTT 97162
Qy      15236 AGCATCACCGATGCAAAAGGTAATCTGCAGCGTGTGGCATATGATGTGGCTGGGCTGCTA 15295
Db      97161 ATCCAGACCGATGCCAAAGGCAACATCCAGCGTCTGGCCTATGATGTAGCCGGGCAGCTA 97102
Qy      15296 TCGGGCAGTTGGTTGACGCTGAAGGACGGCACGGAGCAGGTCATCGTGGCCTCCCTGACG 15355
Db      97101 AAAGGCTGTTGGTTAACACTCAAAGGTCAAGCCGAACAAGTGATTATCAAATCGCTGACC 97042
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Db      97041 TACTCTGCCGCCGGACAAAAATTACGTGAAGAGCACGGTAACGGGGTTATCACCGAATAC 96982
Qy      15416 ATTTACGAGCCGGAAACACAGCGCCTGACGGGGATTAAAACGGAACGTCCGTCTGGGCAC 15475
Db      96981 AGCTATGAACCAGAAACCCAACGGCTTATTGGTATCACTACCCGCCGTCCGTCAGATACC 96922
Qy      15476 GTTGCCGGAGCAAAAGTGCTGCAGGACCTGCGCTATACGTATGACCCGGTAGGCAACGTA 15535
Db      96921 ------------AAGGTGTTGCAAGACTTACGCTATCAATATGATCCGGTAGGCAATGTG 96874
Qy      15536 CTCAGCGTCAATAACGATGCGGAAGAGACCCGCTTCTGGCGTAACCAGAAAGTGGTACCG 15595
Db      96873 ATCAATATCCGTAACGATGCGGAAGCCACCCGCTTTTGGCGCAATCAGAAAGTGGTCCCG 96814
Qy      15596 GAGAATACGTACATCTACGACAGCCTGTACCAGCTGGTCAGCGCCACAGGGCGTGAGATG 15655
Db      96813 GAGAATAGCTATACTTACGACTCCCTGTACCAGCTTATCAGTGCTACTGGGCGTGAAATG 96754
Qy      15656 GCCAATGCCGGCCAGCAGGGCAACGACTTACCATCCGCTACAGCCCCCCTTCCTACAGAC 15715
Db      96753 GCCAATATAGGTCAGCAAAATAATCAACTGCCCTCCCCTG------CGCTACCTTCCGAC 96700
Qy      15716 AGCTCTGCCTACACCAATTACACGCGCACCTACCGTTATGACCGTGGTGGCAACCTGACG 15775
Db      96699 AACAATACCTACACTAACTATACTCGCCGCTACAGTTATGATCACAGCGGTAATCTGACG 96640
Qy      15776 CAGATGCGCCACAGTGCCCCTGCCACGAACAATAATTATACGACAGACATCACGGTTAGT 15835
Db      96639 CAAATTCGGCACAGTTCATCGGCTACCCAAAATAACTACACCACCGCTATCACCATCTCG 96580
      15836 GACCGCAGCAATAGGGCGGTACTGAGCACGTTGGCGGAAGTGCCGTCAGATGTTGATATG 15895
      96579 AATCGCAGTAACCGCGGCGTTCTCAGTACGCTGACAACAGATCCAAATCAAGTGGATACG 96520
      [illegible]CTGTTCAGTGCAGGAGGTCACCAGAAGCACCTGCAGCCGGGGCAAGCACTGGTGTGGACG 15955
      [illegible]GATGCCGGTGGTCACCAAACCAGTTTATTACCCGGTCAGACACTGGTCTGGACA 96460
      [illegible]GACTGCAAAAGGTGACACCGGTGGTGCGTGATGGGGGGGCGGACGACAGC 16015
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Db      96459 TCACGAGGAGAGTTAAAGCAGGTCAATAACGGTTCAGGAAAT---------- 96418
Qy      16016 GAAAGCTATCGGTATGATGCGGGCAGTCAGCGTATTATCAAAACCGGCACGCGGCAAACT 16075
Db      96417 GAATGGTACCGATACGGCAGCAACGGAATGAGACAACTGAAAGTGAGTGAACAGCCAACC 96358
Qy      16076 GGCAACAACGTTCAGACACAGCGGGTAGTGTACCTGCCGGGGCTGGAGTTACGTATCATG 16135
Db      96357 CAGAATACTACGCAGCAGCAGCGGGTAATCTATCTGCCGGGGCTGGAACTACGCACAACC 96298
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Qy      16196 GCACAAGTGCGCGTATTGCACTGGGAGATCGGCAAGCCGGATGACCTCGATGAGGACTCG 16255
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Qy      16256 GTGCGTTACAGTTACGATAACCTGGTGGGCAGCAGCCAGCTGGAGCTGGACAGAGAGGGT 16315
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Qy      16316 TACCTTATCAGTGAGGAGGAGTTCTACCCGTATGGCGGAACGGCTGTTCTGACGGCGCGA 16375
Db      96117 CAGATTATTAGTGAGGAAGAGTATTATCCATTCGGCGGCACAGCGATGTGGGCAGCCAAT 96058
Qy      16376 AGTGAGGTTGAGGCTGACTACAAAACTATCCGATACTCAGGCAAGGAGCGTGACGCGACG 16435
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Qy      16496 GACCCGGCAGGCACGGTGGACGGGCTGAACCTGTTCCGCATGGTGCGGAATAATCCCGTC 16555
Db      95937 GATCCGGCAGGAACCATTGATGGGCTGAATCTATACCGAATGGTGAGAAATAATCCAGTA 95878
Qy      16556 ACGCTGTTTGACAGCAACGG 16575
Db      95877 AGTTTGCAGGATGAAAATGG 95858
```

RESULT 6
AAV17876
ID AAV17876 standard; DNA; 38258 BP.
XX
AC AAV17876;
XX
DT 23-JUL-1998 (first entry)
XX
DE Cloned toxin gene sequence from Xenorhabdus strain NCIMB 40887.
XX
KW Xenorhabdus; toxin; insecticidal; protection; Pieris brassicae; crop;
KW Pieris rapae; Plutella xylostella; Lepidoptera; Diptera; animal; ss.
XX
OS Xenorhabdus sp.
XX
PN WO9808388-A1.
XX
PD 05-MAR-1998.
XX
PF 27-AUG-1997; 97WO-GB002284.
XX
PR 29-AUG-1996; 96GB-00018083.
XX
PA (UKAG-) UK MIN AGRIC FISHERIES & FOOD.
XX
PI Jarrett P, Ellis DJ, Morgan JAW;
XX
DR WPI; 1998-179074/16.
XX
PT Orally active insecticidal composition, used for protection of crops or

PT animals - contains pesticidal material from Xenorhabdus species
PT optionally synergised with Bacillus thuringiensis toxin.
XX
PS Claim 2; Fig 2; 46pp; English.
XX
CC This is a toxin gene sequence cloned from a Xenorhabdus strain NCIMB
CC 40887. This has insecticidal activity and can be used in an insecticidal
CC composition for oral delivery to an insect. The composition includes
CC material encoded by Xenorhabdus strains NCIMB 40886 and 40887,
CC particularly it contains Xenorhabdus cells or culture supernatant. It may
CC also include active materials from other sources, especially Bacillus
CC thuringiensis or delta-endotoxins, and is formulated with a carrier,
CC especially an edible material for the pest. Pesticidal agents isolated
CC from Xenorhabdus species, especially X. nematophilus have oral activity
CC against Pieris brassicae or rapae, Plutella xylostella and are heat-
CC stable at 55 deg. C. They are resistant to proteolysis by trypsin and
CC proteinase K, and are inactivated by sodium dodecylsulphate or acetone,
CC and by heating to 80 deg. C. The compositions are used to kill Diptera
CC and Lepidoptera, particularly P. brassicae or rapae, P. xylostella and
CC Culex quinquefaciatus, e.g. for crop or animal protection, also for
CC vector control. The isolated pesticidal agent may be expressed in
CC transformed plants to impart protection. Xenorhabdus materials show
CC synergistic effects when formulated with Bacillus thuringiensis toxins
XX
SQ Sequence 38258 BP; 10486 A; 8248 C; 8871 G; 10630 T; 0 U; 23 Other;

Query Match 8.8%; Score 1658.8; DB 2; Length 38258;
Best Local Similarity 53.1%; Pred. No. 0;
Matches 4978; Conservative 0; Mismatches 3802; Indels 598; Gaps 44;

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Qy      7301 ATGGACTTCTCCGGAGCCAATGCCCTCTATTTCTGGGAGCTGTTCTATTACACGCCGATG 7360
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Db     10859 ATGGATTTCAATAGTGCCAGCGCCCTCTATTACTGGGA-ATGTTCTATTACACCCCGATG 10917

Qy      7361 ATGGTGTTCCAGCGGTTGTTGCAGGAACAGCACTTCCCGGAAGCCACCCGCTGGCTGCAG 7420
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Qy      7481 GTCCGTCCGCTGGAGGAGGACACCGGCTGGAACGACTCGCCGCTGGACTCCATTGACCCC 7540
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Qy      7601 GACCTGCTGATTGCCCGCGGTGATGCCGCCTACCGGCTGCTCGAGCGGGACACCCTTAAC 7660
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Db     11156 GATCAACTTATTCTGCGCGGCGATATGGCCTATCGCGAACTGACCCGCGATGCGTTGAAT 11215

Qy      7661 GAGGCCCGGATGTGGTACGTCCAGGCCCTGAACCTTCTGGGCGACGAGCCCTATATTTCC 7720
             || |||  |||||||||| || |  ||  || |  | |||||  || |||||  |    || |
Db     11216 GAAGCCAAGATGTGGTATGTGCGTGCTTTGGAATTGCTGGGTGATGAGCCGGAGGATTAC 11275

Qy      7721 TTTGACGCCGACTGGTCGGCGTTGACCCTGGGTGACGCAGCCAGCGAGGTGACGCGACGC 7780
                |    | ||| | ||   | | ||   |  || | || | |    |  || |
Db     11276 GGCAGCCAACAGTGGGCCGCACCGTCTCTTTCCGTGGCGGGCAACCACACTGTGCAAGCG 11335

Qy      7781 GATTACCAGGAGGCCCTGCTGGCCGTGCGCCGGTTGGTGCCCGCTCCCGAGACACGGACG 7840
             |  || ||  | | |||   |||  |    |  |          |  | || |
Db     11336 GGCTATCAACAAGACCTTACGGCGCTAGACAACGGAGAAGGTTGCACTCAACCCCGCAAC 11395

Qy      7841 GCGAATTCCCTGACGGCACTGTTCCTCCCGCAGCAGAACGAGGTGCTCAAAGGCTACTGG 7900
             || || ||  ||  ||  || |||| ||| |  | |||  ||       |  | ||||||
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Qy      7901 CAAACCTTGGCACAGCGGCTCCATAACCTGCGCCACAACCTCTCCATTGACGGCCAGCCG 7960
             ||||||  ||     ||| ||   ||||||||||||  || |  |||| ||||||  || |||
Db     11455 CAAACC-TGCGTTTGCGCCTGGTTAACCTGCGCCATAATCCTTCCA-TGACGGGCAACCG 11512

Qy      7961 CTTTCCCTGTCCGTCTACGCCACGCCGTCCGAACCGTCCGCCCTGCAGAGTGCCGTCGTC 8020
             | || ||| |    |||||  |  |  | ||| |||   || ||||  |      | ||
Db     11513 TTATCGCTGGCGAATTACGCGAGCC--TACGATCCGAAAGCGCTGCTCACCAGTATGGTA 11570

Qy      8021 AACAGCGCGCAGGGTGCTGCAGCACTGCCGGCCGCGGTGATGCCGCTTTACAGTTTCCCG 8080
             |      | ||||| | |   ||| ||| | |||       || || | ||| | ||||||
Db     11571 CAGCCTTCTCAGGGCGGTAGTGCAGTGCTGCCCGGCACATTGTCGTTATACCGCTTCCCG 11630

Qy      8081 GTCATGCTGGAGAACGCCCGGGGGATGGTGAGCCTGCTGACCGGGTTCGGCAACACACTG 8140
             || |||||||||    |||||      ||||    |  | |||  |||||||| | | |||
Db     11631 GTGATGCTGGAGCGGGCCCGCAATCTGGTAGCGCAATTAACCCAGTTCGGCACCTCTCTG 11690

Qy      8141 CTCGGTATTACCGAGCGTCAGGATGCGGAGGCGCTGGCCAAACTGCTGCAGACCCAGGGC 8200
             ||| ||||  | ||||  | |  |||||  || |   ||  |||   ||||  |     |||||
Db     11691 CTCAGTATGGCAGAGCATGATGATGCCGATGAACTCACCACGTTGCTACTACAGCAGGGT 11750

Qy      8201 AGTGAACTGATACGCCAGGGCCTTCGCCAGCAGGATAACGTCCTCGAGGAAATCGATGCG 8260
             |  ||||||       ||| || | ||     ||| |          |||| ||| | |||||
Db     11751 ATGGAACTGGCGACACAGAGCATCCGTATTCAGCAACGAACTGTCGATGAAGTGGATGCT 11810

Qy      8261 GATATTGCCGCCCTGGAGGAGAGCCGCCGCGGCGCGCAGATGCGTTTTGAACGTTACAAA 8320
             ||||||||  |   |||  |||||||||||| | || || |  ||| | |||   ||| |
Db     11811 GATATTGCTGTATTGGCAGAGAGCCGCCGCAGTGCACAAAATCGTCTGGAAAAATACCAG 11870

Qy      8321 GTGTTGTACGAGGCCGGACGTCAACACCGGCGAAAAACAGGCCATGGACTTGTACCTCAGT 8380
               | |||| || | |||  |||||  ||| ||| | |  || |||    |||
Db     11871 CAGCTGTATGACGAGGATATCAACCACGGAGAACAGCGTGCGATGTCACTGTTTGATGCG 11930

Qy      8381 TCGTCCGTGCTGTCGGCATCAACCGCCGCGCTCTTTTTGGCCGAGGCCGCGGCCGATATG 8440
             || | |  | |||          |||||||    | || || |  | ||| ||  |
Db     11931 GCGGCAGGTCAGTCTCTGGCCGGGCAGGCGCTCTCAGTAGCAGAAGGGGTGGCTGACTTA 11990

Qy      8441 CTGCCCAATATTTACGGGCTGGCCGTCGGGGGCTCCCGCTATGGGGCACTATTTAAAGCC 8500
             | || ||  | | |||  | ||     || |||   || |  ||||||  | |    ||
Db     11991 GTTCCAAACGTGTTCGGTTTCGCTTGTGGCGGCAGTCGTTGGGGGGCAGCACTGCGTGCT 12050

Qy      8501 ACCGCCATCGGCATCCAGGTGTCCTCCGATGCCACCCGCATATCAGCGGACAAAATCAGC 8560
             |||||  ||  ||   | | ||  ||  ||  |||      || || ||||||||||||
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Qy      8561 CAGTCGGAAGTGTACCGCCGTCGCCGGGAGGAGTGGGAAATCCAGCGTGATAGTGCGCAG 8620
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Db     12111 CGTTCGGAAGCCTACCGCCGCCGCCGTCAGGAGTGGGAAATTCAGCGTGATAATGCTGAC 12170

Qy      8621 TCTGACGTGGCGCAGATTGATGCCCAGCTGGCGGCCATGGCAGTGCGCCGGGAAGGGGCT 8680
             |||  ||    || ||  ||||||||||||||     | ||  |  | |||  | ||||  ||
Db     12171 GGTGAAGTCAAACAAATGGATGCCCAGCTGGAAAGCCTGAAAATACGCGGCGAAGCAGCA 12230

Qy      8681 GAGCTGCAGAAAACTTACCTTGAGACCCAGCAGACCCAGGCACAGGCGCAGTTGGCATTC 8740
             || |||||    || |  |||||||||||| ||||  |  |||||  |||||  |    |
Db     12231 CAGATGCAGGTGGAATATCAGGAGACCCAGCAGGCCCATACTCAGGCTCAGTTAGAGCTG 12290

Qy      8741 CTGCAGAGTAAGTTCAACAATACGGCTCTGTACAGCTGGCTGCGGGGCAGGTTGTCCGCC 8800
             | |||  |||| ||||   || |  || || |||||  ||| ||||  |||  ||    ||
Db     12291 TTACAGCGTAAATTCACAAACAAAGCGCTTTACAGTTGGATGCGCGGCAAGCTGAGTGCT 12350

Qy      8801 ATTTATTACCAGTTCTATGACCTGGCAGTATCCCGCTGCCTGATGGCGCAACAGGCCTGG 8860
             || |||||||||||||| |||||||  |    |||  ||||||||||||  ||  |  ||   |
Db     12351 ATCTATTACCAGTTCTTTGACCTGACCCAGTCCTTCTGCCTGATGGCACAGGAAGCGCTG 12410

Qy      8861 CAGTGGGATAAATTCGAGA---CTAGGTCGTTTATCCAGCCGGGGGCCTGGATGGGGGCA 8917
             |   | ||      ||| |    |  | |||||||  |   ||||||||||  ||  |
Db     12411 CGCCGCGAGCTGACCGACAACGGTGTTACCTTTATCCGGGGTGGGGCCTGGAACGGTACG 12470

Qy      8918 AATGCCGGTCTGCTGGCCGGGGAAACCCTGATGCTGAATCTGGCGCAGATGGAGCAGGCC 8977
             | ||| ||| || |||| || |||||  || |||||||||||||  | |||||  | | |
Db     12471 ACTGCGGGTTTGATGGCGGGTGAAACGTTGCTGCTGAATCTGGCAGAAATGGAAAAAGTC 12530

Qy      8978 TGGCTGACGGGGGATGAGCGGGCAATAGAGGTGACGCGGACGGTCTGCCTGTCGGAGGTC 9037
             ||||||  | | |||||||||||| | || |||||  || || ||||   || |  || ||
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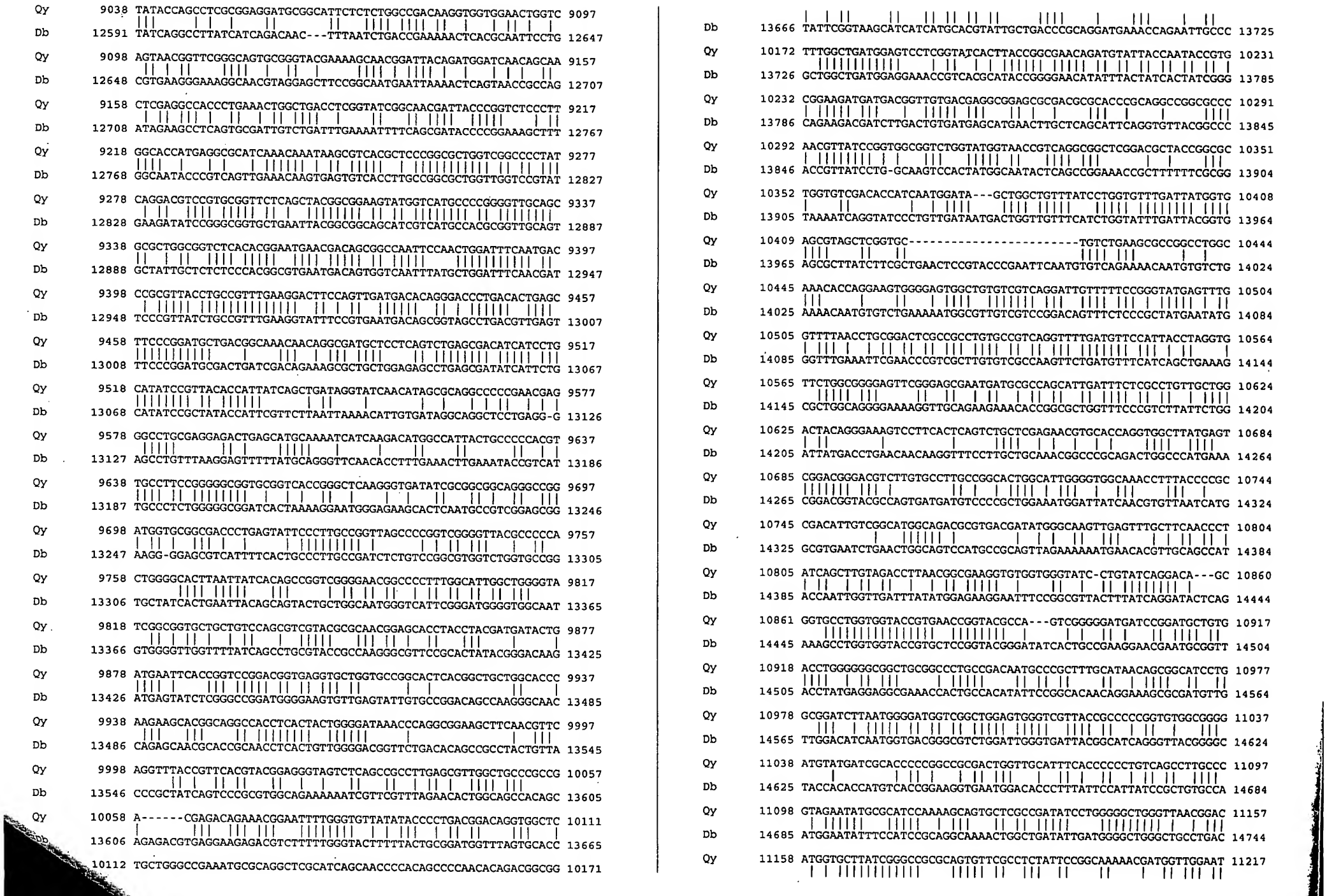

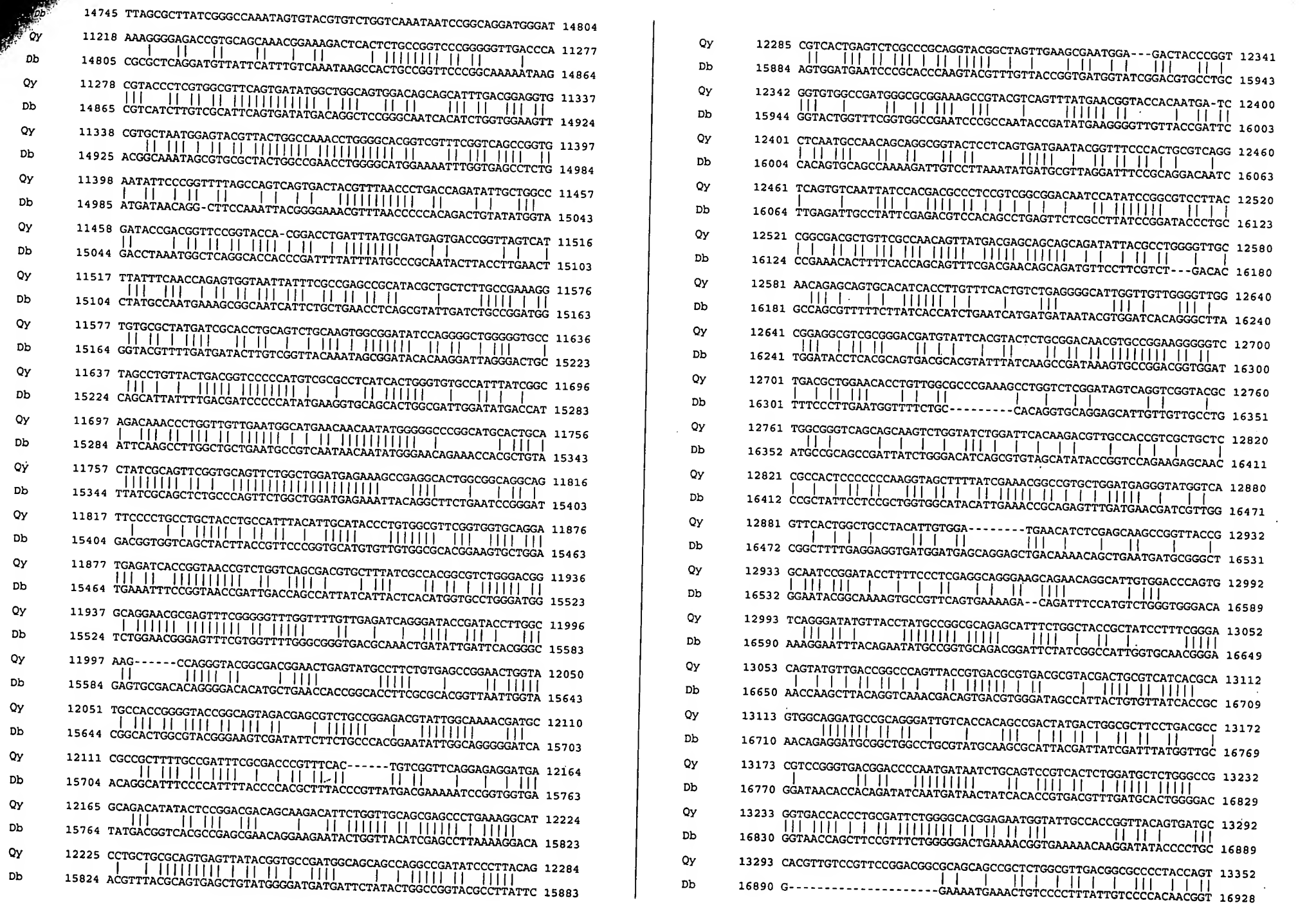
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Qy 11398 AATATTCCCGGTTTTAGCCAGTCAGTGACTACGTTTAACCCTGACCAGATATTGCTGGCC 11457
Db 14985 ATGATAACAGG-CTTCCAAATTACGGGGAAACGTTTAACCCCCACAGACTGTATATGGTA 15043
Qy 11458 GATACCGACGGTTCCGGTACCA-CGGACCTGATTTATGCGATGAGTGACCGGTTAGTCAT 11516
Db 15044 GACCTAAATGGCTCAGGCACCACCCGATTTTATTTATGCCCGCAATACTTACCTTGAACT 15103
Qy 11517 TTATTTCAACCAGAGTGGTAATTATTTCGCCGAGCCGCATACGCTGCTCTTGCCGAAAGG 11576
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Qy 12111 CGCCGCTTTTGCCGATTTCGCGACCCGTTTCAC------TGTCGGTTCAGGAGAGGATGA 12164
Db 15704 ACAGGCATTTCCCCATTTTACCCCACGCTTTACCCGTTATGACGAAAAATCCGGTGGTGA 15763
Qy 12165 GCAGACATATACTCCGGACGACAGCAAGACATTCTGGTTGCAGCGAGCCCTGAAAGGCAT 12224
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Db 15884 AGTGGATGAATCCCGCACCCAAGTACGTTTGTTACCGGTGATGGTATCGGACGTGCCTGC 15943
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Qy 12521 CGGCGACGCTGTTCGCCAACAGTTATGACGAGCAGCAGCAGATATTACGCCTGGGGTTGC 12580
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Qy 12581 AACAGAGCAGTGCACATCACCTTGTTTCACTGTCTGAGGGGCATTGGTTGTTGGGGTTGG 12640
Db 16181 GCCAGCGTTTTTCTTATCACCATCTGAATCATGATGATAATACGTGGATCACAGGGCTTA 16240
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Qy 12761 TGGCGGGTCAGCAGCAAGTCTGGTATCTGGATTCACAAGACGTTGCCACCGTCGCTGCTC 12820
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Qy 12821 CGCCACTCCCCCCCAAGGTAGCTTTTATCGAAACGGCCGTGCTGGATGAGGGTATGGTCA 12880
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Qy 12881 GTTCACTGGCTGCCTACATTGTGGA--------TGAACATCTCGAGCAAGCCGGTTACCG 12932
Db 16472 CGGCTTTTGAGGAGGTGATGGATGAGCAGGAGCTGACAAAACAGCTGAATGATGCGGGCT 16531
Qy 12933 GCAATCCGGATACCTTTTCCCTCGAGGCAGGGAAGCAGAACAGGCATTGTGGACCCAGTG 12992
Db 16532 GGAATACGGCAAAAGTGCCGTTCAGTGAAAAGA--CAGATTTCCATGTCTGGGTGGGACA 16589
Qy 12993 TCAGGGATATGTTACCTATGCCGGCGCAGAGCATTTCTGGCTACCGCTATCCTTTCGGGA 13052
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Qy 13053 CAGTATGTTGACCGGCCCAGTTACCGTGACGCGTGACGCGTACGACTGCGTCATCACGCA 13112
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Qy 13173 CGTCCGGGTGACGGACCCCAATGATAATCTGCAGTCCGTCACTCTGGATGCTCTGGGCCG 13232
Db 16770 GGATAACACCACAGATATCAATGATAACTATCACACCGTGACGTTTGATGCACTGGGGAC 16829
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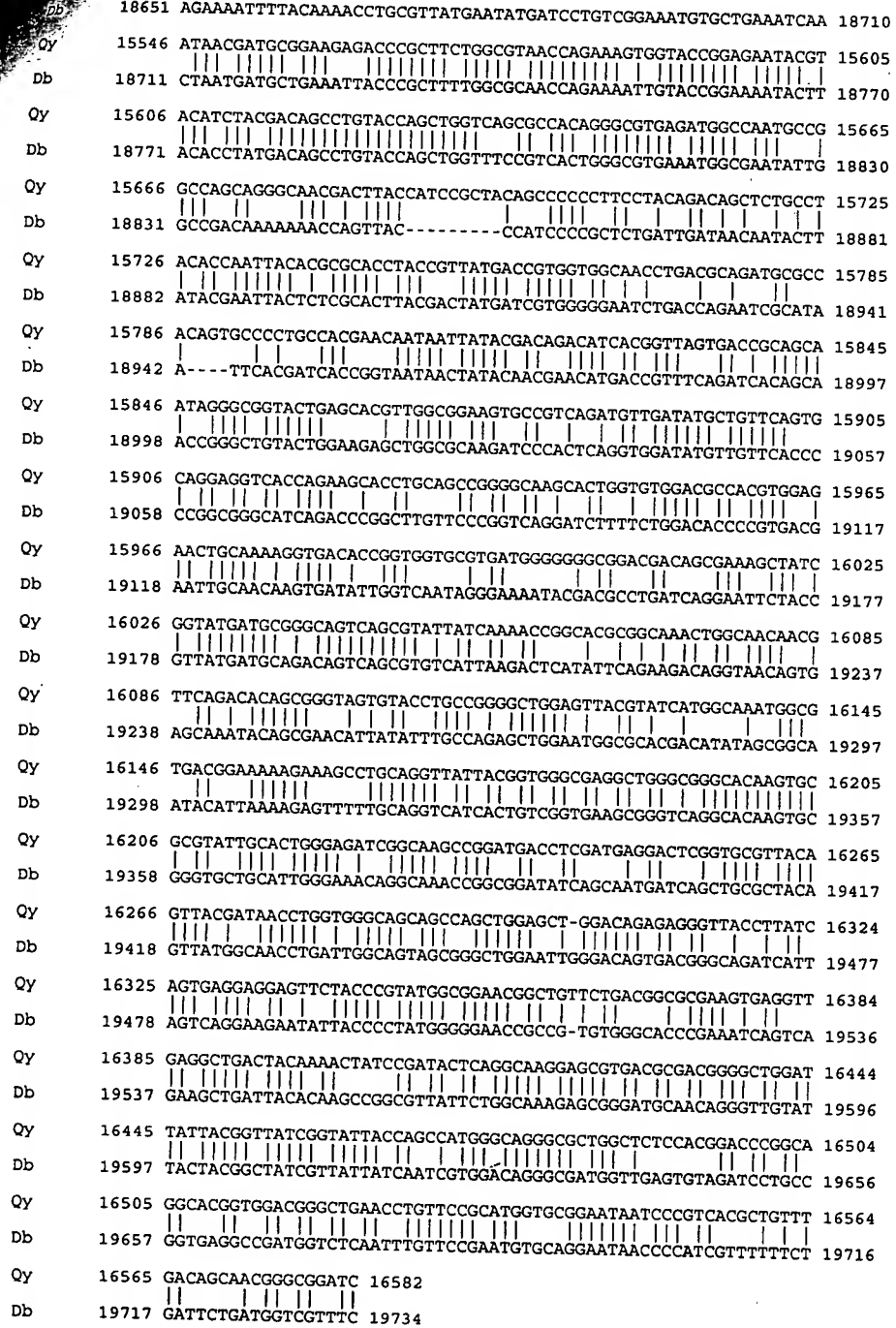
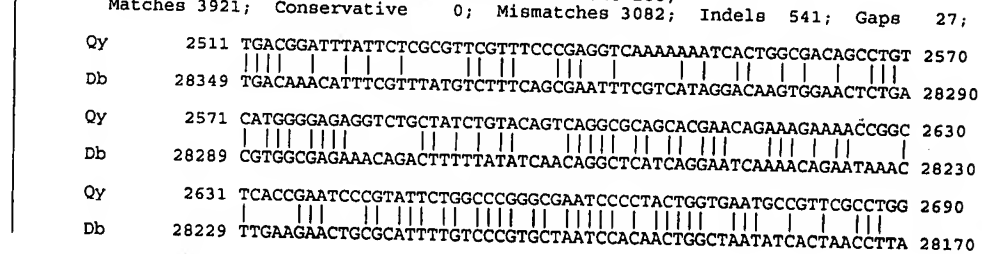


RESULT 7
AAV17876/c
ID AAV17876 standard; DNA; 38258 BP.
XX
AC AAV17876;
XX
DT 23-JUL-1998 (first entry)
XX
DE Cloned toxin gene sequence from Xenorhabdus strain NCIMB 40887.
XX
KW Xenorhabdus; toxin; insecticidal; protection; Pieris brassicae; crop;
KW Pieris rapae; Plutella xylostella; Lepidoptera; Diptera; animal; ss.
XX
OS Xenorhabdus sp.
XX
PN WO9808388-A1.
XX
PD 05-MAR-1998.
XX
PF 27-AUG-1997; 97WO-GB002284.
XX
PR 29-AUG-1996; 96GB-00018083.
XX
PA (UKAG-) UK MIN AGRIC FISHERIES & FOOD.
XX
PI Jarrett P, Ellis DJ, Morgan JAW;
XX
DR WPI; 1998-179074/16.
XX
PT Orally active insecticidal composition, used for protection of crops or
PT animals - contains pesticidal material from Xenorhabdus species
PT optionally synergised with Bacillus thuringiensis toxin.
XX
PS Claim 2; Fig 2; 46pp; English.
XX
CC This is a toxin gene sequence cloned from a Xenorhabdus strain NCIMB
CC 40887. This has insecticidal activity and can be used in an insecticidal
CC composition for oral delivery to an insect. The composition includes
CC material encoded by Xenorhabdus strains NCIMB 40886 and 40887,
CC particularly it contains Xenorhabdus cells or culture supernatant. It may
CC also include active materials from other sources, especially Bacillus
CC thuringiensis or delta-endotoxins, and is formulated with a carrier,
CC especially an edible material for the pest. Pesticidal agents isolated
CC from Xenorhabdus species, especially X. nematophilus have oral activity
CC against Pieris brassicae or rapae, Plutella xylostella and are heat-
CC stable at 55 deg. C. They are resistant to proteolysis by trypsin and
CC proteinase K, and are inactivated by sodium dodecylsulphate or acetone,
CC and by heating to 80 deg. C. The compositions are used to kill Diptera
CC and Lepidoptera, particularly P. brassicae or rapae, P. xylostella and
CC Culex quinquefaciatus, e.g. for crop or animal protection, also for
CC vector control. The isolated pesticidal agent may be expressed in
CC transformed plants to impart protection. Xenorhabdus materials show
CC synergistic effects when formulated with Bacillus thuringiensis toxins
XX
SQ Sequence 38258 BP; 10486 A; 8248 C; 8871 G; 10630 T; 0 U; 23 Other;

Query Match 6.7%; Score 1260.8; DB 2; Length 38258;
Best Local Similarity 52.0%; Pred. No. 1.1e-288;
Matches 3921; Conservative 0; Mismatches 3082; Indels 541; Gaps 27;



GenCore version 5.1.6

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Searched: 824507 seqs, 355394441 residues

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Listing first 45 summaries

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Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Query Match	Length	DB	ID	Description
1	2368.8	12.5	37948	3	US-09-251-645-11	Sequence 11, Appl
2	1108.8	5.9	4431	4	US-09-817-514A-3	Sequence 3, Appli
3	969.8	5.1	4458	4	US-08-851-567B-31	Sequence 31, Appl
4	903.4	4.8	6055	4	US-08-851-567B-25	Sequence 25, Appl
5	848.8	4.5	7551	4	US-08-851-567B-46	Sequence 46, Appl
6	848.8	4.5	7551	4	US-09-637-048C-1	Sequence 1, Appli
7	848.8	4.5	7551	4	US-09-817-514A-1	Sequence 1, Appli
8	848.8	4.5	7551	4	US-10-435-835-1	Sequence 1, Appli
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19	725	3.8	3132	4	US-08-851-567B-60	Sequence 60, Appl
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ALIGNMENTS

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; Sequence 11, Application US/09251645
; Patent No. 6281413
; GENERAL INFORMATION:
; APPLICANT: Kramer, Vance C.
; APPLICANT: Morgan, Michael K.
; APPLICANT: Anderson, Arne R.
; APPLICANT: Hart, Hope
; APPLICANT: Warren, Gregory W.
; APPLICANT: Dunn, Martha
; APPLICANT: Chen, Jeng S.
; TITLE OF INVENTION: NOVEL INSECTICIDAL TOXINS FROM PHOTORHABDUS LUMINESCENS
; TITLE OF INVENTION: AND NUCLEIC ACID SEQUENCES CODING THEREFOR
; FILE REFERENCE: CGC1963/A
; CURRENT APPLICATION NUMBER: US/09/251,645
; CURRENT FILING DATE: 1999-02-17
; NUMBER OF SEQ ID NOS: 22
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; SEQ ID NO 11
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; FEATURE:
; NAME/KEY: CDS
; LOCATION: (15171)..(18035)
; OTHER INFORMATION: orf5
; FEATURE:
; NAME/KEY: CDS
; LOCATION: (23768)..(31336)
; OTHER INFORMATION: hph2
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Query Match 12.5%; Score 2368.8; DB 3; Length 37948;
Best Local Similarity 54.0%; Pred. No. 0;
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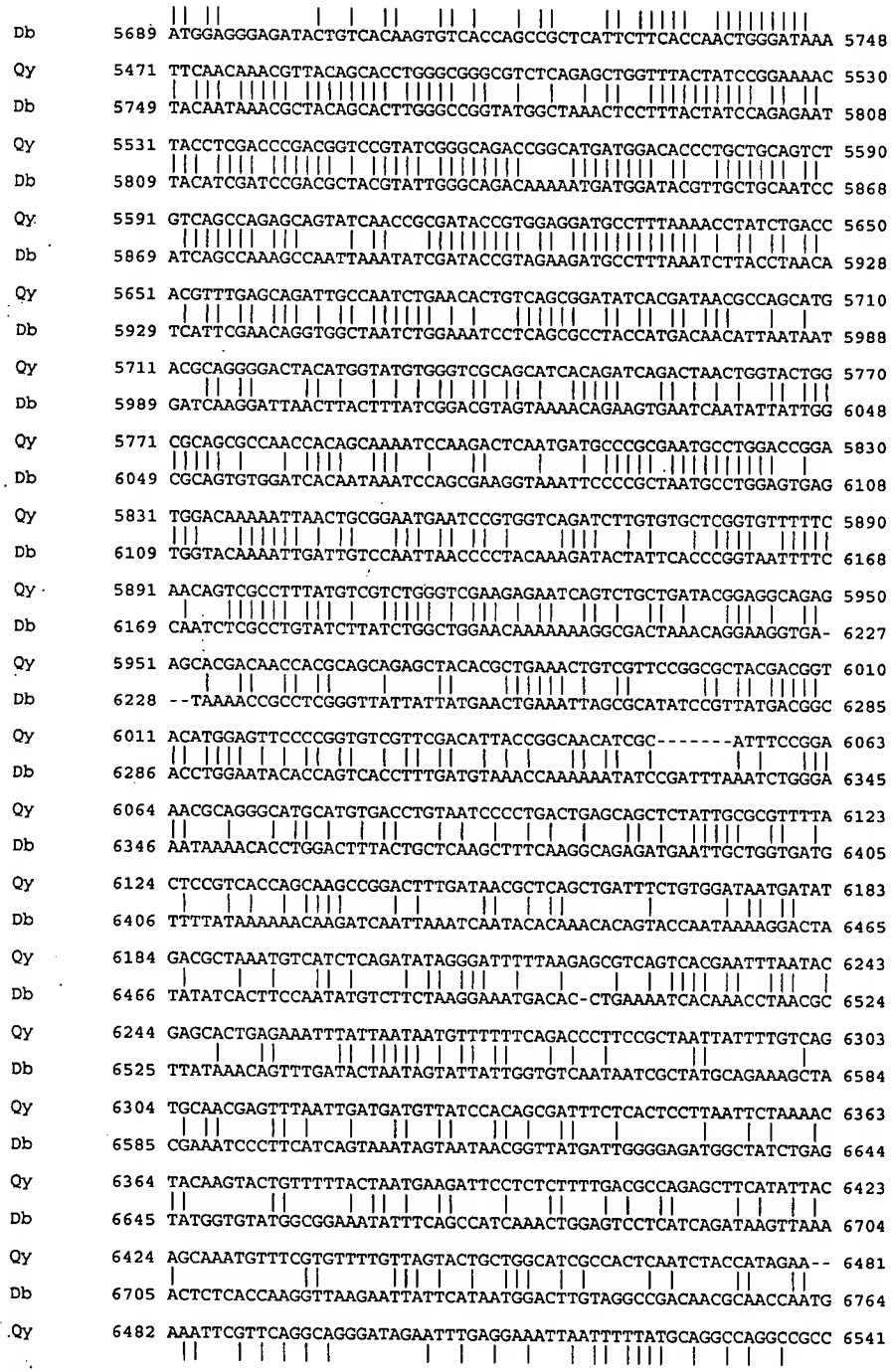
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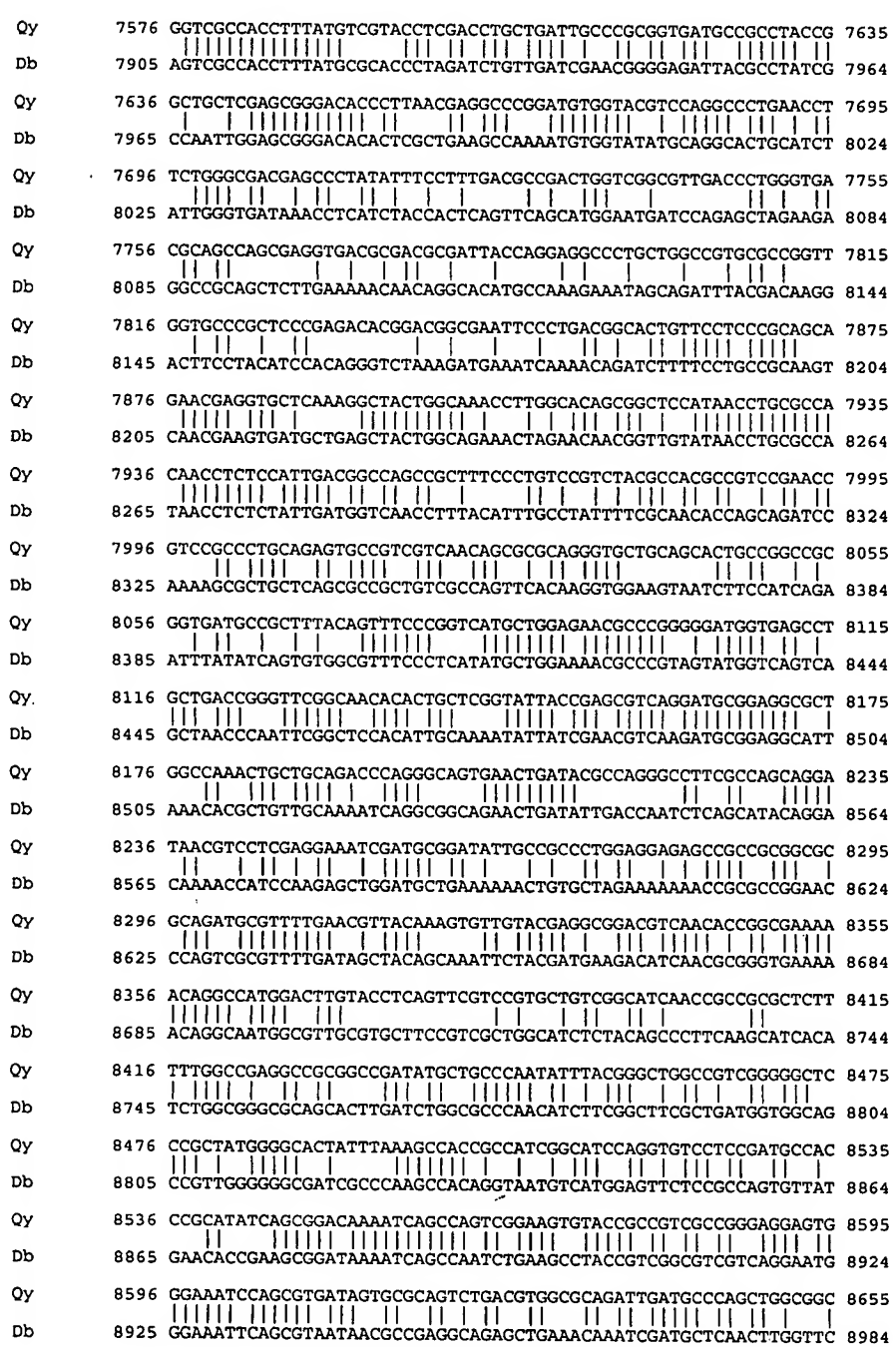
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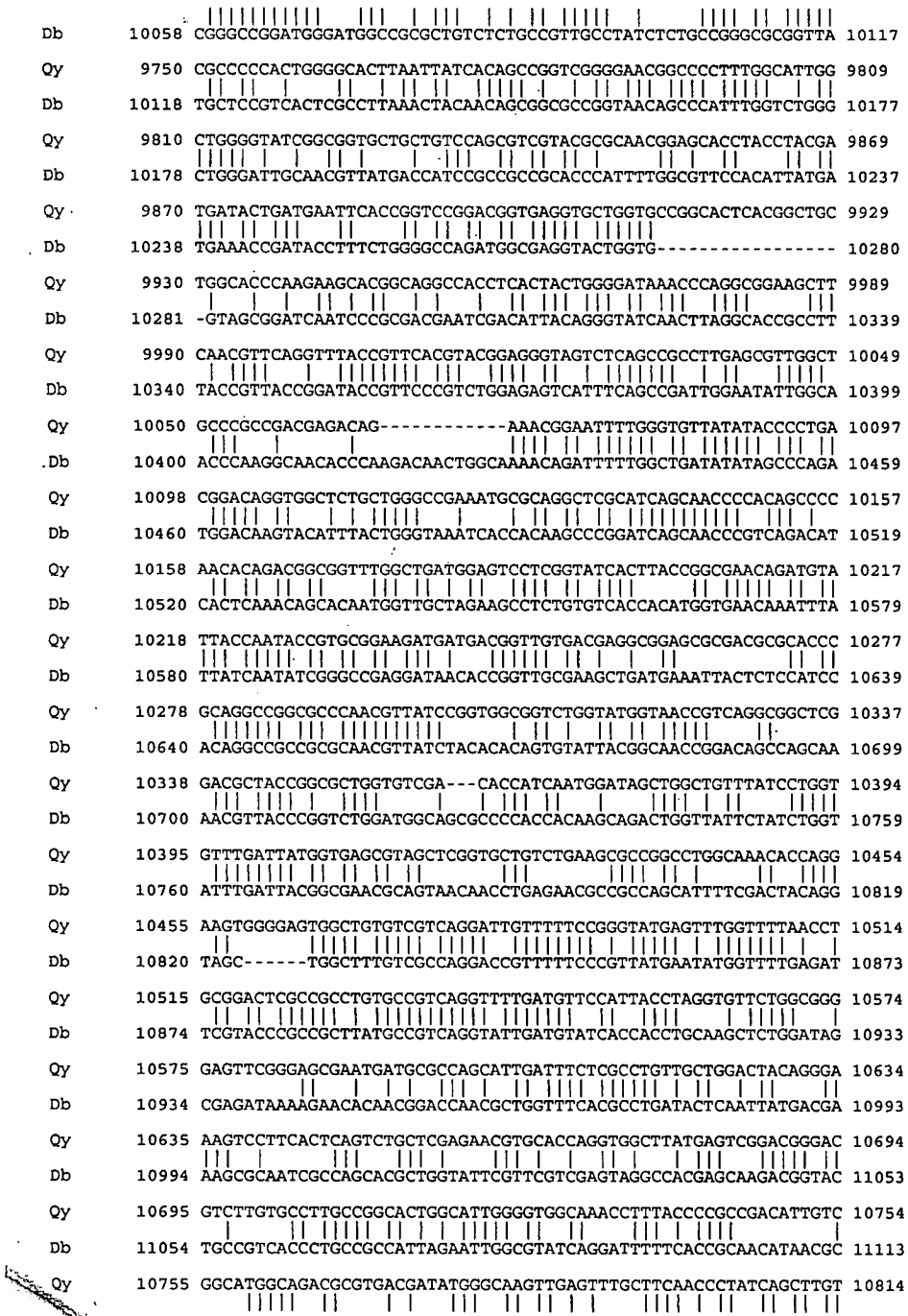
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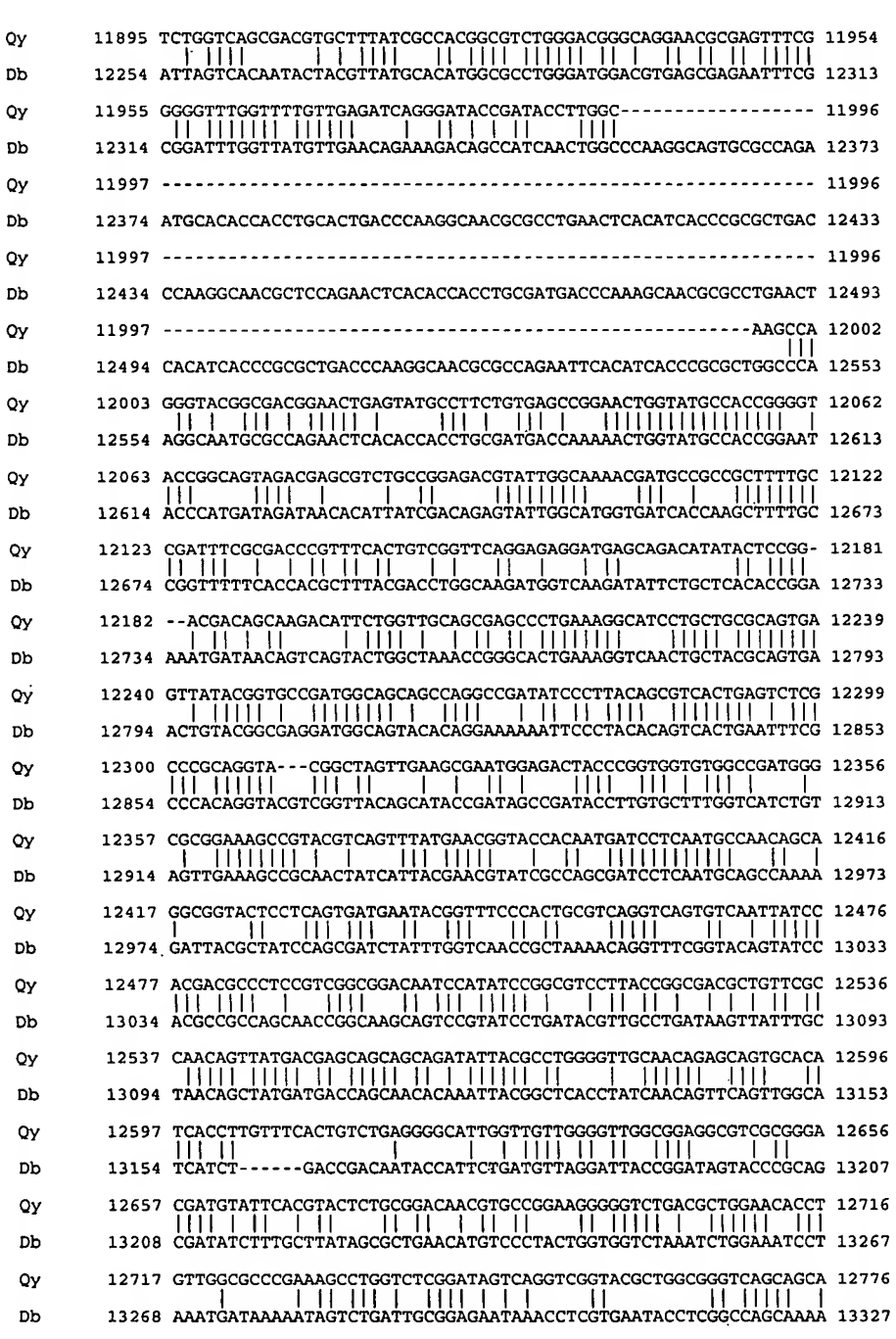
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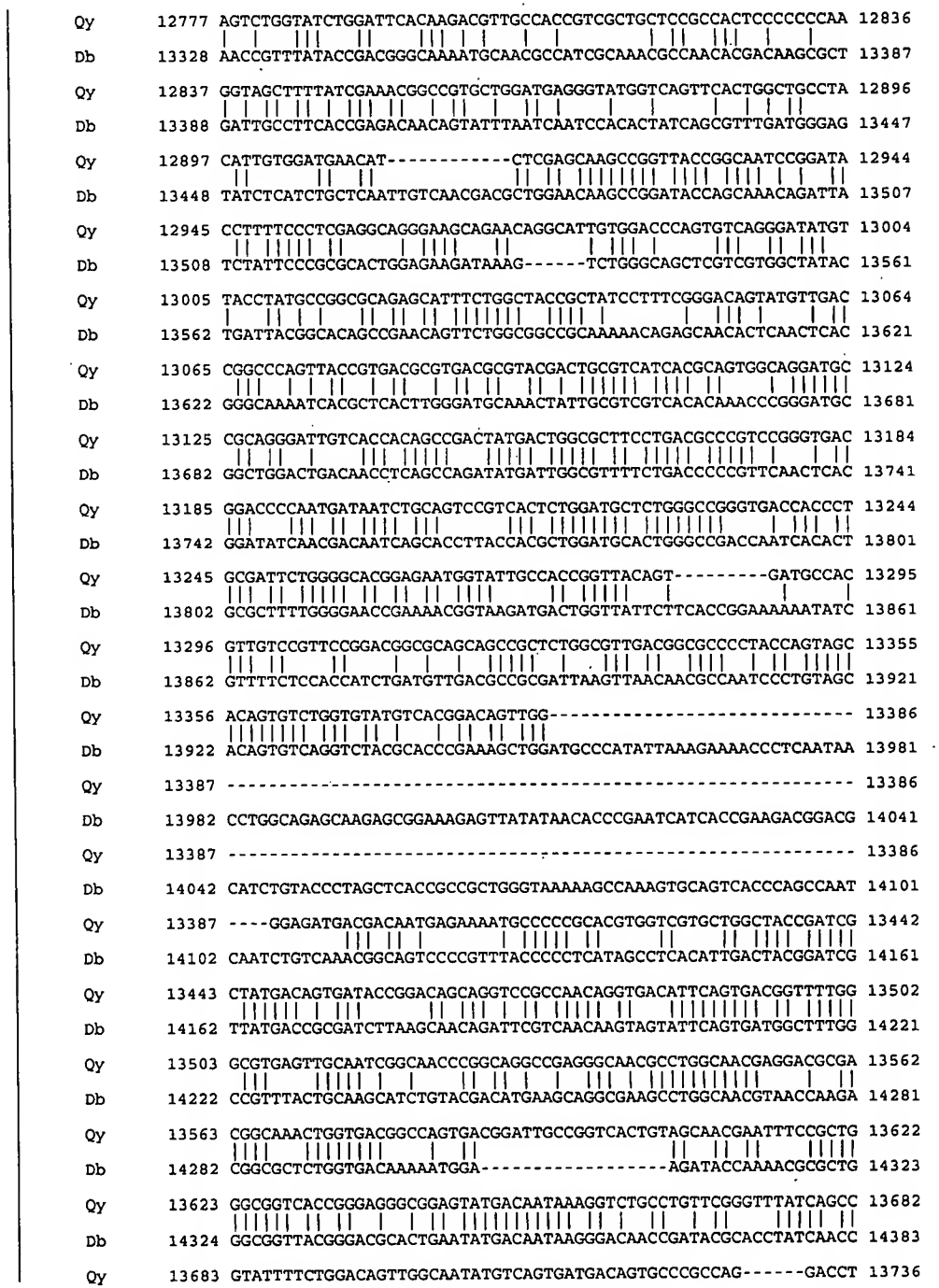
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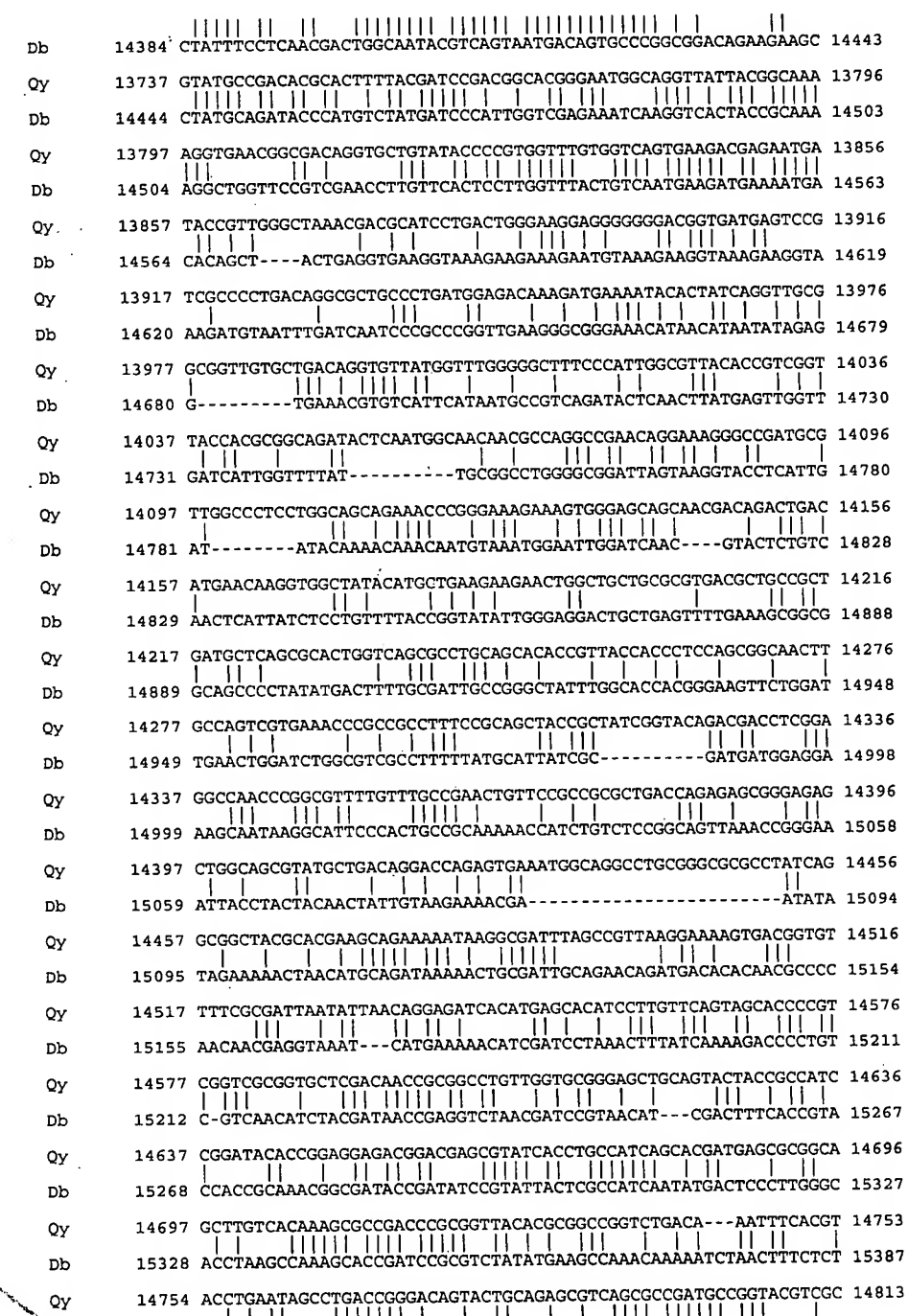

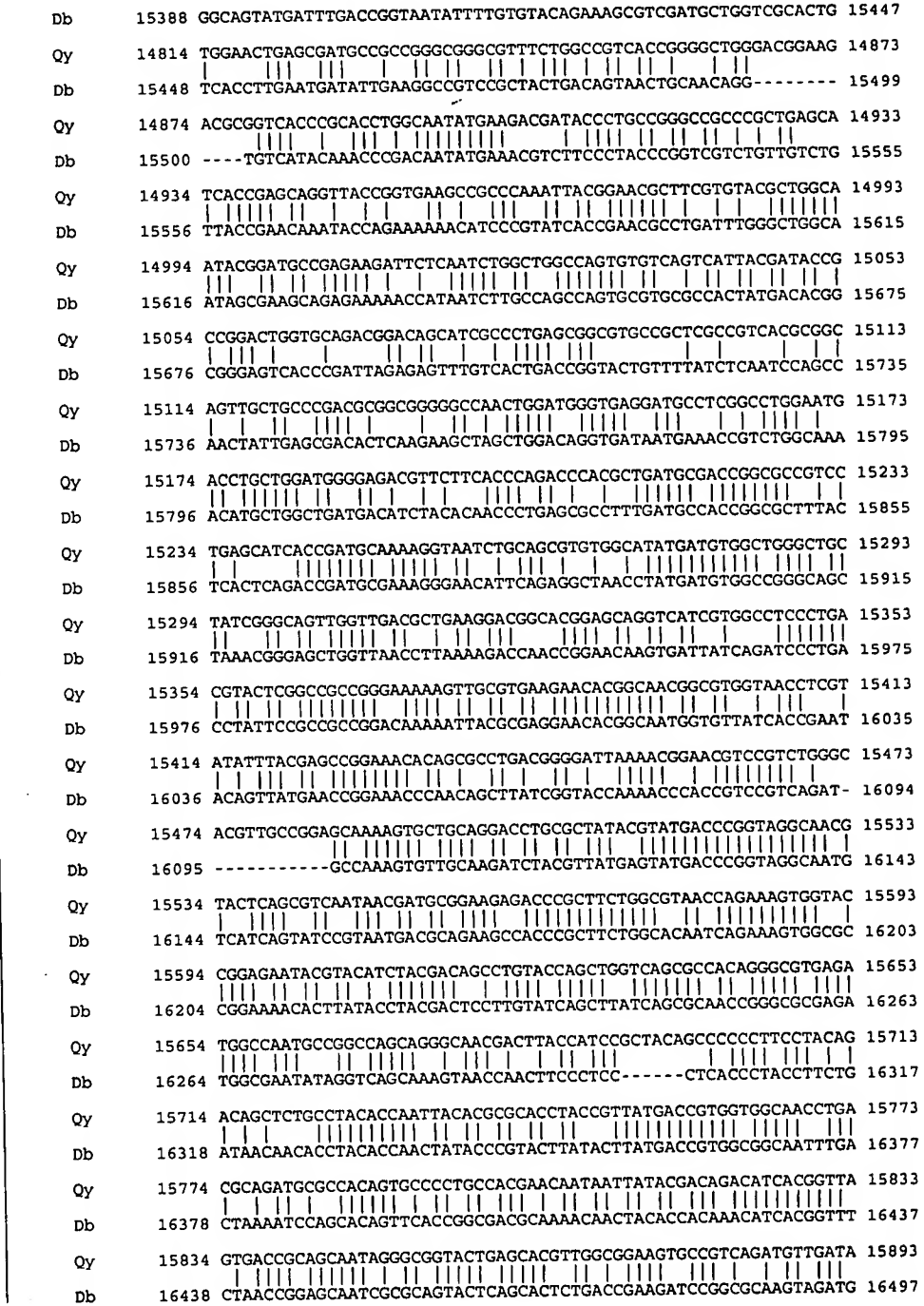

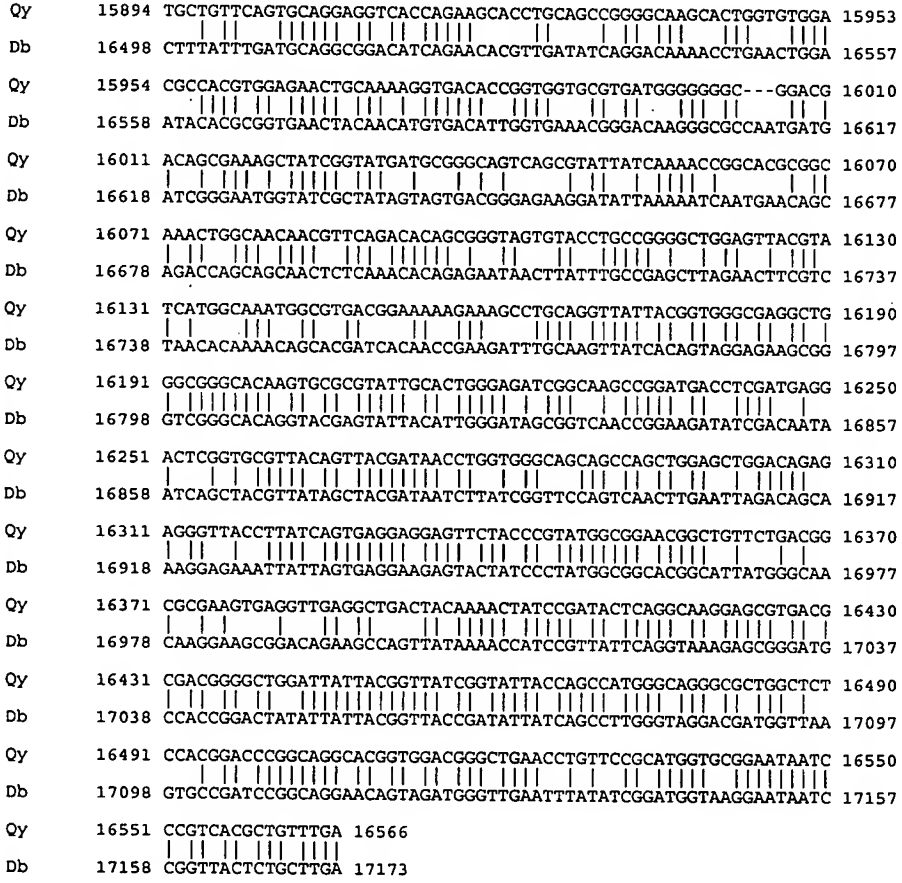

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US-09-817-514A-3
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; Patent No. 6639129
; GENERAL INFORMATION:
; APPLICANT: ffrench-Constant, Richard
; APPLICANT: Bowen, David
; APPLICANT: Rocheleau, Thomas
; APPLICANT: Waterfield, Nicholas
; TITLE OF INVENTION: DNA SEQUENCES FROM PHOTORHABDUS LUMINESCENS
; FILE REFERENCE: 61645
; CURRENT APPLICATION NUMBER: US/09/817,514A
; CURRENT FILING DATE: 2000-03-26
; PRIOR APPLICATION NUMBER: US 60/191806
; PRIOR FILING DATE: 2000-03-24
; NUMBER OF SEQ ID NOS: 8
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 3
; LENGTH: 4431
; TYPE: DNA
; ORGANISM: Photorhabdus luminescens
; FEATURE:
; NAME/KEY: CDS

; LOCATION: (1)..(4431)
US-09-817-514A-3

Query Match 5.9%; Score 1108.8; DB 4; Length 4431;
Best Local Similarity 56.0%; Pred. No. 3.6e-298;
Matches 2493; Conservative 0; Mismatches 1732; Indels 225; Gaps 12;